Applic. No. 10/667,717
Amdt. dated January 19, 2006
Reply to Office action of October 19, 2005

Claim Amendments

This listing of the claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (currently amended): An optical sensing head for sensing laser radiation reflected by an optical data memory and for reading out the optical data memory, the optical sensing head comprising:

a substrate having a main surface extending along a first main plane;

an edge-emitting laser component for emitting laser radiation along an irradiation axis oriented essentially parallel to said first main plane, said laser component configured on said main surface of said substrate;

a deflection device configured on said main surface of said substrate, said deflection device for providing deflected laser radiation in a direction essentially perpendicular to said main surface by deflecting the laser radiation emitted by said laser component;

at least one signal detector for sensing the laser radiation reflected by the optical data memory; ~~and~~

an optical element for guiding the deflected laser radiation to the optical data memory and for guiding the laser radiation reflected by the optical data memory to said signal detector; and

a supporting element connecting said optical element ~~connected~~ to said substrate;

at least one of said supporting element and said deflection device being produced from glass and being nondetachably connected to said substrate.

Claim 2 (original): The optical sensing head according to claim 1, wherein said deflection device also serves as a supporting element for connecting said optical element to said substrate.

Claim 3 (original): The optical sensing head according to claim 1, wherein:

said signal detector is an irradiation-direction signal detector configured on said main surface of said substrate;

said irradiation-direction signal detector is configured on said irradiation axis of said laser component; and

said irradiation-direction signal detector is configured downstream of said deflection device with respect to a direction of irradiation of the laser radiation emitted by said laser component.

Claim 4 (original): The optical sensing head according to claim 1, further comprising:

an opposite-direction signal detector configured on said main surface of said substrate;

said opposite-direction signal detector configured on said irradiation axis of said laser component; and

with respect to said laser component, said opposite-direction signal detector configured in a direction opposite to a direction of the laser radiation emitted by said laser component.

Claim 5 (currently amended): The optical sensing head according to claim 4, ~~further comprising:~~

~~a supporting element for connecting said optical element to said substrate;~~

wherein said supporting element is configured between said laser component and said opposite-direction signal detector.

Claim 6 (original): The optical sensing head according to claim 5, wherein:

said supporting element, which is configured between said laser component and said opposite-direction signal detector, has a surface facing said laser component; and

said surface of said supporting element has a metallic or dielectric mirrored layer.

Claim 7 (original): The optical sensing head according to claim 5, wherein:

said supporting element, which is configured between said laser component and said opposite-direction signal detector, has a surface facing said laser component; and

said surface of said supporting element has an absorption layer.

Claim 8 (original): The optical sensing head according to claim 5, wherein said supporting element, which is configured between said laser component and said opposite-direction signal detector, is embodied as a deflection device for deflecting stray light of said laser component away from said opposite-direction signal detector.

Claim 9 (original): The optical sensing head according to claim 5, wherein said supporting element, which is configured between said laser component and said opposite-direction signal detector, is embodied as a deflection device for deflecting stray light of said laser component away from said opposite-direction signal detector in a direction essentially perpendicular to said main surface.

Claim 10 (original): The optical sensing head according to claim 1, wherein said signal detector is formed in said substrate.

Claim 11 (original): The optical sensing head according to claim 10, wherein said signal detector includes an array of PIN photodiodes formed in said substrate.

Claim 12 (original): The optical sensing head according to claim 1, further comprising:

a monitor detector for checking an irradiation power of said laser component;

said monitor detector integrated on said substrate.

Claim 13 (original): The optical sensing head according to claim 1, further comprising:

a plurality of detectors, said plurality of detectors including said at least one signal detector;

a plurality of supporting elements;

said deflection device embodied as a deflection mirror;

said plurality of supporting elements configured beside said deflection mirror;

said plurality of detectors configured between said deflection mirror and said plurality of supporting elements;

said optical element mounted on said plurality of supporting elements.

Claim 14 (original): The optical sensing head according to claim 1, wherein said substrate is formed by a silicon substrate.

Claim 15 (cancelled).

Claim 16 (original): The optical sensing head according to claim 1, wherein said main surface of said substrate has an area of 10 mm^2 or less.

Claim 17 (cancelled).

Claim 18 (original): A method for fabricating an optical sensing head, which comprises:

providing the optical sensing head according to claim 1; and

fabricating the deflection device by:

sawing a glass wafer into individual strips,

obtaining ground surfaces by grinding surfaces onto the strips at a predetermined angle,

coating the ground surfaces with a highly reflective mirrored layer to obtain deflection prisms for deflecting laser beams, and

nondetachably orientating and connecting the deflection prisms to the substrate.

Claim 19 (original): The method according to claim 18, wherein the step of connecting the deflection prisms to the substrate is performed by anodic bonding.

Claim 20 (original): The method according to claim 18, which further comprises:

before performing the step of sawing the glass wafer, metalizing regions on a front side of the glass wafer;

the regions providing soldering surfaces for connecting optical components to the substrate after performing the step of connecting the deflection prisms to the substrate.

Claim 21 (original): The method according to claim 18, which further comprises:

before performing the step of sawing the glass wafer, introducing trenches into a rear side of the glass wafer by sandblasting.

Claim 22 (original): The method according to claim 18, which further comprises:

when performing the step of fabricating the deflection device, concurrently fabricating supporting elements from the glass wafer.

Claim 23 (original): The method according to claim 18, which further comprises:

forming an array of PIN photodiodes in the substrate;

the PIN photodiodes serving as a signal detector or as a plurality of signal detectors.

Claim 24 (original): The method according to claim 18, wherein the predetermined angle is approximately 45°.